ternal Air, will burn but a little longer than in the firſt Experiment; and if you blow in at the Pipe with your Mouth, it will go out rather ſooner.

EXPERIMENT IV.

Blow in at the Pipe with Bellows, and the Candle will burn as long as you will.

V. *A* Chemical Experiment *by Mr.* John Maud, *ſerving to illuſtrate the* Phœnomenon *of the* Inflammable Air *ſhewn to the* Royal Society *by Sir* James Lowther, *Bart.* *as deſcribed in* Philoſoph. Tranſact. *Numb.* 429.

SIR *James Lowther* having formerly favour'd the Society with an Experiment upon ſome Air which he collected out of a Coal-Mine, and brought in Bladders cloſe tied, by Sea to Town: The Effect of which was, that the Air being preſs'd out of the Bladder through the ſmall Orifice of a Tobacco-Pipe, would catch Fire from a lighted Candle, and burn like an inflammable Spirit, until it was all conſumed. A particular Account of which has been printed in the *Philoſoph. Tranſ.* Numb. 429. *p.* 109, *&c.*

Upon conſidering that the Cauſe was only a great Quantity of ſulphureous Vapours fluctuating in that Air, I was naturally induced to make an Eſſay

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Eſſay, by an artificial Mixture, to produce the like Effect. It is very well known to every one verſed in Chemical Affairs, that moſt Metals emit great Quantities of ſulphureous Vapours, during the Effervеſcence which they undergo in their Solutions in their reſpective *Menſtrua*, or *Solvents*. Of theſe Fumes Iron emits a great Quantity whilſt it is diſſolving in Oil of Vitriol, which are very inflammable, and not eaſily to be condens'd. Theſe Fumes I collected into a Bladder with the deſired Succeſs, and having produc'd before the Society two Bladders of this fictitious Air, at the ſame time that Sir *James Lowther* was pleaſed to make trial of his, they both exhibited the ſame Phenomena. I ſhall here give a more particular Account of the Preparation made uſe of, which was as follows.

I took ʒij of Oil of Vitriol and mixt it with ℥viij of common Water, which I put into a Glaſs with a flat Bottom about ten Inches wide and three deep, with a long Neck; to this I added ʒij of Iron Filings: There inſtantly aroſe a great Heat, with a violent Ebullition, and the Iron was wrought upon very faſt, with Fumes copiouſly exhaling. To the End of the Neck of the Glaſs I luted a Bladder void of Air, the Neck of the Bladder being faſten'd to a Tobacco-Pipe; the Fumes ariſing from the diſſolving Metal ſoon puffed up the Bladder to its full Extent, when that being taken away, the Neck of it being firſt tied cloſe with a String, I applied another in the ſame manner: Thus you may get as many Bladders full as you can, whilſt the Effervеſcence laſts. Two of theſe Bladders were tried before the Society, and exhibited a Flame like thoſe of Sir *James Lowther*, very like in the Smell, tho' ſomewhat different in the Colour of the Flame. After I had preſs'd Part of the Air out of the Bladder, by drawing back the Hand, the Flame was ſuck'd into the Bladder, and ſet on Fire, what inflammable Air remain'd, all at once; which went off like a Gun, with a great Exploſion.

What is worthy of Notice in this Experiment is, that all the Air which fill'd the Bladders was as it were generated *de novo* out of the Mixture, or elſe recover'd from being lock'd up in the Body of the Metal in an unelaſtic State.

This Experiment will eaſily explain a very probable Cauſe of Earthquakes, Vulcanos, and all fiery Eruptions out of the Earth; for nothing more is requiſite than an Intervention of Iron with a vitriolic Acid and Water. Now Iron is generally found accompanied with Sulphur: And common Sulphur may be analyſed into an inflammable Oil, and an acid Liquor like Oil of Vitriol. This Acid therefore in the Bowels of the Earth, by being diluted with a little Water, ſurrounds the Iron, and works upon it in the ſame manner as deſcribed above; an Effervecence and inteſtine Heat ariſes; the Air which comes from the Mixture is rarified, and becomes very elaſtic, its *Impetus*, by how much the more compreſſed by the incumbent Weight of Earth, is increaſed even to an unlimited Degree, and at length, like Gun-powder, will remove all Obſtacles, and will exhibit to the Spectators above Ground the terrible Phenomena of Earthquakes and Eruptions. Theſe inflammable Fumes ſometimes, if very much heated, will, as ſoon as they come to the open Air, catch Fire, and ſo produce thoſe fiery Eruptions, of which there are ſo many Inſtances in the World.

VII. *A Letter from Mr.* Henry Forth *to the late Rev*^{d} William Derham, *D. D. Canon of* Windſor, *and F. R S. concerning the Storm* Jan. 8*th*, 173$\frac{4}{5}$.

Darlington, Jan. 18, 173$\frac{4}{5}$.

Honoured Sir,

ALTHO' I am not ſo happy as to be acquainted with your Perſon, I am no Stranger to your Labours, wherewith you have obliged the World; and that Part which relates to Obſervations upon the Alteration of the Weather, I have for ſome ſmall time purſued, for my own private Satisfaction, upon your ingenious Model.

The diſmal Accounts we have had from the Southern Parts, of the Storm of Wind which happened on the 8th Inſtant, put me upon reflecting, that one of your Curioſity might deſire to know how our Northern Regions were affected by it; which will, I hope, be a ſufficient Apology for this Liberty.

The Place from which I write, and where I reſide, is 14 Miles South of *Durham*, Lat. 54° 46′. The Evening before the 8th, my Barometer ſtood